EUROCAE WG-78 Plenary # 30 / RTCA SC-214 Plenary # 38 **"Standards for Air Traffic Data Communication Services" - Minutes**

Date	*December 14 – December 17, 2021*
Place	*Virtual*
Hosted by	*RTCA*

Meeting Summary:

The joint plenary of RTCA Special Committee 214 (SC-214) (#38) and EUROCAE Working Group 78 (WG-78) (#30) was held December 14-17, 2021. The meeting was conducted as a virtual meeting with the following attendees participating via WebEx.

Name	**Company**
Alexander Engel	EUROCAE
Ana Beroiz	Eurocontrol
Andrew Ives	Inmarsat
Antonio Harrison	ESA
Arndt Suendermann	DFS
Bjarni Stefansson	ISAVIA
Claire Robinson	Universal Avionics
Crystal Kim	ICAO
Dongsong Zeng	MITRE
Ed Hahn	ALPA
Edward San	FAA
Eric Mok	Universal Avionics
Frederic Beltrando	Airbus
Gary Colledge	Inmarsat
Greg Saccone	Boeing
Gregg Nesemeier	FAA
Heidi Demoulins	Airbus

Name	Company
Isabelle Herail	Eurocontrol
Joachim Hochwarth	GE Aviation
Karan Hofmann	RTCA
Karsten Mikeska	DFS
Kim Cardosi	DOT
Luc Emberger	Airbus
Macarena Martin Viton	Airbus
Madhu NIraula	Collins
Mark Reed	ALPA
Martina Angelone	ESA
Mike Matyas	Boeing
Pascal Rohault	Thales
Pete Muraca	FAA
Randy Bone	MITRE
Rebecca Morrison	RTCA
Richard Kynard	Garmin
Rochelle Perera	Boeing
Shelley Bailey	NavCanada
Theresa Brewer	FAA
Thierry Lelievre	Airbus
Thomas Hess	DFS
Thomas Mustach	FAA
Tracy Lennertz	DOT
Viktor Jagasits	Eurocontrol
Zbig Jasiukajc	SITA

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1. Welcome, Introductions and Administrative Remarks (Plenary)

The joint 38th Plenary of SC-214 / 30th Plenary of WG-78 was convened on December 14th, 2021 at 9:00 am EDT by Chairs Claire Robinson (Universal Avionics) and Luc Emberger (Airbus). RTCA anti-trust statement, proprietary policy and membership policy were read by Karan Hofmann (RTCA). Alex Engel (EUROCAE) then presented the EUROCAE IPR policy, participation policy, and the GDPR privacy policy. Welcoming remarks were then made, followed by each attendee introducing themselves.

2. Agenda, Meeting Minutes and Action Item Review (Plenary)

The detailed agenda was reviewed and a few scheduling changes were made for the subgroup sessions (non plenary). The agenda was then agreed to with no further changes.

Meeting minutes from SC-214 Plenary 37/WG-78 Plenary 29 were reviewed and approved with one edit to an attendee name.

Rochelle Perera (Boeing) went over the action item list and any actions which were completed were officially closed. The action items were revisited once more at the closing plenary session.

All documents and presentation material reviewed during Plenary have been uploaded and are available in the applicable RTCA AerOpus documents folder.

3. Boeing Proposed Changes for B2 Standards (Plenary)

Mike Matyas (Boeing) presented the paper titled "Boeing Dec 2021 Input to SC-214 / WG-78" which detailed several proposed changes to the Baseline 2 documents. While some of the proposals were presented with little or no discussion, several items garnered more in depth discussion by the group.

The first item the group discussed was the proposal to have the A-IM and DRNP services formally validated or if not, then removed from the standards. The complexity of these two features results in implementation impacts which go beyond just the datalink message set and would need to be taken into account when designing a compliant system. Thomas Mustach (FAA) stated that while the goal of having the features validated makes sense, there is no formal need to do so prior to including it in a standard. The group further commented that as long as the standards maintained two versions (one with these two services, and one without), there isn't an immediate drawback to keeping the services as part of the standards. Further discussion on these two services was had later in the day when additional subject matter experts were available.

The group then discussed the need for B1 backwards compatibility. The Boeing understanding is that per the mandate, ATSUs are required to implement B2 CPDLC with B1 backwards compatibility, but the airborne side does not. Arndt Suendermann (DFS) stated that the intent is to mandate just EPP/ADS-C downlinks and that there is no intention to mandate the B2 CPDLC message set on the ground side. Thomas Mustach (FAA) agreed that the way the mandate is worded, it encourages building an aircraft that is only partially compliant to the standards since it would only comply with the EPP sections of the standards. This would cause issues for certification as there are no partial build approvals. The group decided that this should be further discussed with EASA.

The next item which resulted in group discussion was regarding moving the boundary between the airplane and the CSP into the "DL Radio" section of the diagram below for any allocations. This was because the time required to obtain channel access for downlink messages should not be considered part of the aircraft allocation.
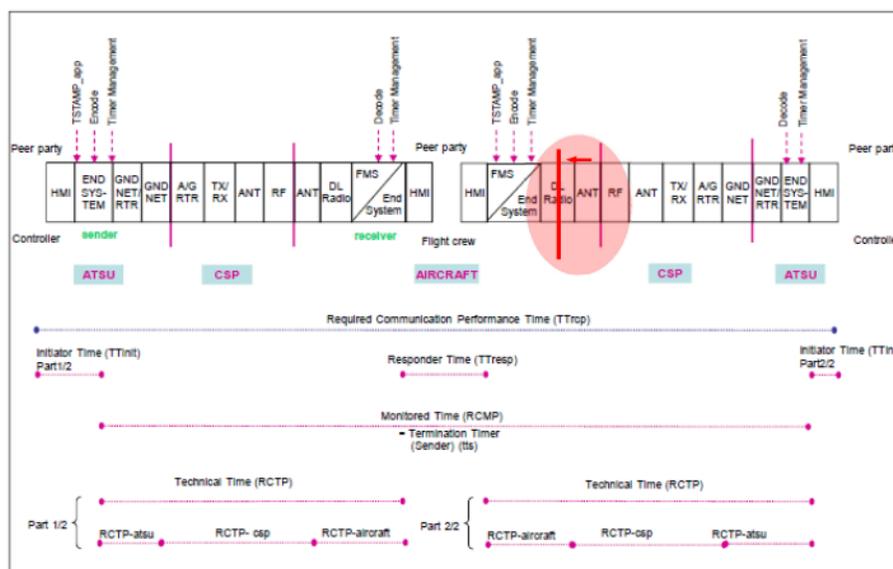
It was also suggested that section D.7.3 of DO-350A/ED-228A be revised with additional text to state that channel access time for downlink messages may be assumed to be negligible. Airbus also supported this proposal.

The group then discussed the proposal to simplify the B2 checksum algorithm by only having one option. Frederic Beltrando (Airbus) noted that the different versions of possible checksum algorithms are provisions for the future. Removing the additional options may result in reducing the future expandibility of the system.

The next proposal from the paper which garnered group discussion was the proposal to add "both sides" as a choice for "direction" and "directionSide" parameters to facilitate weather deviations. Weather deviations can result in flight crews needing to offset both sides of their current route in order to navigate around weather cells. The group discussed how an FMS would load such a clearance (if at all) and how backwards compatibility could be maintained. It was decided to continue discussion of this item in the operational subgroup first, followed by the interoperability subgroup.

The group then agreed that all of these proposals should be further discussed in the relevant subgroups. Boeing took an action to allocate each proposal to the relevant subgroup change matrix to facilitate this additional discussion.

4. Operational Examples for Verification Test Standard (Plenary)

Pete Muraca (FAA), Dan Fontana (FAA) and Heather Kinney (Leidos for FAA) went over the "Operational Issues by Example for 'ATS Data Communications Verification Test Standard' Scope" presentation. This presentation outlined five operational examples driving the request for a verification test standard deliverable.

Of the examples presented, the group noted that example 5, "uplink message concatenation rejected…" seemed to be a non-compliance to existing requirements whereas the other examples were different implementations of the requirements.

Frederic Beltrando (Airbus) commented that there cannot be a verification of a requirement when that requirement does not exist. And it cannot be made applicable to already certified systems.

Mike Matyas (Boeing) asked if the FAA had done similar analysis against the B2 SPR and Interop standards. Pete Muraca (FAA) stated that so far they have only done this against the FANS requirements.

During further discussion of the examples, it was noted that these issues were found when compared to the ERAM ground system requirements but had not been traced to requirements in the applicable industry standards.

Rochelle Perera (Boeing) stated that it makes sense to do this for B2 applications as we develop and finalize requirements going forward, but it really can't be done for FANS or B1 at this point without adding requirements or derived requirements. Pete Muraca (FAA) agreed with this assertion. However Thomas Mustach (FAA) commented that he still believes that there is value to do this test for FANS 1/A and B1 implementations as well. The discussion concluded due to time constraints and will continue during the verification subgroup discussions at a later.

5. Pilot Reported CPDLC Issues in Europe

Viktor Jagasits (Eurocontrol) presented "Pilot reported issues with CPDLC". This presentation detailed issues reported by flight crews which were resulting in low CPDLC usage as it was seen more as a nuisance rather than a tool for better efficiency.

While some of the issues discussed were deemed to be implementation or human machine interface (HMI) issues, the high rate of uplinked messages which were considered nuisance messages by flight crews was discussed further. Example of such messages is shown in the ATC log below:

As European airspace is comprised of many separate centers which require their own logon connection and transfers, it results in many non-clearance messages being uplinked, sometimes in quick succession. This so far has not been an issue in CPDLC implementations in the US, most likely due to there only being one logon required.

Arndt Suendermann (DFS) commented that a real need for European airspace was for standardization of procedures amongst the different centers. However, that may be beyond the scope of this group's tasks. Mike Matyas (Boeing) noted that there are ways for the current group to assist with the overall goal of standardizing procedures. One way would be to re-examine the transfer procedure in DO-350A/ED-228A Figure 3-3 and determine which messages are truly necessary and of those, which need to actually be displayed to the flight crew. This would assist with reducing "nuisance" messages and also the overall number of messages on the network. An action item was taken for the operational subgroup to review the procedure/figure.

6. Boeing Proposed Changes for B2 Standards Continued

The group then returned to discussing the Boeing proposed changes to the standards presented earlier in the day by Mike Matyas (Boeing). Doug Arbuckle (FAA) also joined the discussion as a subject matter expert.

Mike Matyas (Boeing) reviewed the request to formally validate A-IM and DRNP services or remove them from the standards, so as to reduce the likelihood that later on the requirements are deemed insufficient. The services need to be fully understood in order to implement them correctly, which goes beyond just the message set.

Doug Arbuckle (FAA) discussed validation activities that had taken place so far and had resulted in an update to DO-328B/ED-195B, the SPR/Interop standard for Airborne Spacing-Flight Deck Interval Management. Additionally there is a planned Initial Interval Management operational trial to be conducted in Albuquerque Center beginning in 2022 and lasting at least one year.

The question was then asked what was keeping the group from moving forward with fully committing to include the services. Madhu Niraula (Collins Aerospace) commented that while the program is on the FAA Roadmap for implementation, it is currently unfunded so there is hesitation on investing in implementing it on the avionics side.

Shelley Bailey (NavCanada) stated that when the group last worked on the A-IM and DRNP, that the messages did not get the attention they really needed because there was not a lot of certainty on how they would be used and the associated details.

Randy Bone (MITRE) requested clarification on whether the group was making a determination to remove the A-IM and DRNP requirements today. Mike Matyas (Boeing) replied that the intent was not to remove them today but rather discuss the fact that if we are to have full and complete set of requirements, the features need to be fully understood which would involve validation.

The group concluded discussion on this by assigning an action item to Boeing to review DO-328B/ED-195B document for updated validation information and further discussion on this subject would be done in the SC-186 Tiger Team.

7. Day 2 & 3 Non Plenary Working Sessions

Day two agenda consisted of the Performance/Safety and Operational subgroup kickoff sessions. The Performance/Safety subgroup is led by Theresa Brewer (FAA) and the Operational subgroup is led by Thierry Lelievre (Airbus).

Day three agenda consisted of continuing Operational subgroup discussions as well as the SC-186 Tiger Team kickoff session which was led by Randy Bone (MITRE) and Joachim Hochwarth (GE Aviation).

Please refer to the subgroup/Tiger Team notes for details on the subgroup discussions.

8. Operational Group Discussion

Day four of the meeting began with a short discussion of the Interoperability subgroup. While there are some proposed changes that may impact the interop standard, there so far has not been any specific tasks assigned to the group for discussion.

It was decided that having an ASN1 expert leading the group would be valuable. Greg Saccone (Boeing) volunteered to lead the ASN1 aspect and will confer with others ASN1 experts as needed.

The group then returned to discussing the verification test and verification subgroup. A potential document editor has been identified and is in the process of obtaining approval from their organization to assist the group.

Thomas Mustach (FAA) proposed starting with the verification test for B2 as all of the test deliverables should follow the same format, so beginning with the B2 version may be easiest.

Eric Mok (Universal Avionics) stated that currently there are differences in aircraft implementations which the group is trying to address. But there are also differences in ground implementations. The standardization cannot happen just on one side, especially when it is the most expensive side (aircraft). If each manufacturer uses a different ground center/implementation to run the test, then it is not standardized. The ground system must also be specified for this to work.

The group discussed again that such a test is valuable for B2 implementations, but is not practical for already certified products such as FANS 1/A and B1. Thomas Mustach (FAA) remarked that while it may not be feasible, our current ToR task is to create verification standards for all of the applications including FANS1/A and B1. The group agreed to focus on B2 going forward as the starting point for the verification standard deliverable.

The group then switched gears to discuss upcoming meeting schedule. There will be a joint working meeting between the members of the performance/safety and operational subgroups scheduled early January 2022 to discuss the proposal from Sandra Schönbach (DFS). The next plenary will be Feb 28-Mar 4, 2022 and will be held in person in Washington DC, USA. There will be virtual options for those who cannot travel.

9. Tor Status Updates (Plenary)

The group then returned to a closing plenary session. Rebecca Morrison (RTCA) read the RTCA anti-trust policy and the proprietary policy. The EUROCAE IPR policy and GDPR policy were read by Alex Engel (EUROCAE). The attendees were then invited to introduce themselves again.

Luc Emberger (Airbus) showed the updated EUROCAE WG-78 ToR with a modification made based on discussions at the EUROCAE Technical Advisory Committee (TAC). The modification was an addition to the verification test standard to specify that it aims primarily at verifying the compliance to Operational Requirements from the SPR (like integration of uplink messages into the FMS), but it does not cover the network or physical layer. The TAC approved the ToR with this change.

Claire Robinson (Universal) discussed the RTCA ToR Rev 16. This ToR is unchanged since the July plenary approval and was taken to PMC on December 16th, 2021. The PMC decided to add some verbiage regarding the ISRA with SC-186 due to a change in how RTCA will be handling ISRAs going forward. The PMC will add the verbiage and route for approval.

The group then discussed the verification test standard and how to approach it since the ToRs do not go into that level of detail. However, it was decided that this type of discussion would be best done in the subgroup working sessions.

10. Sub Group Debriefs (Plenary)

The subgroup and tiger team leaders then provided a debrief for the group.

Operational Subgroup- Thierry Lelievre (Airbus):
Three presentations were discussed during the subgroup working session:
- (NATS) Voice comms transfer discussion WG-78 Dec 2021.pptx
- (DFS) 2021-12-15 DFS New Event Types.pptx
- (DFS) 2021.12_WG78-PerformanceInput OpsDFS.pptx

During discussion of the WG78-PerformanceInput OPSDFS presentation by Sandra Schönbach (DFS), the group agreed to investigate changing the responder allotted time as

the current value may be too large to support CPDLC operations in certain areas of Europe. This will be further discussed with the perf/safety group during a separate working meeting.

So far 21 change proposals have been recorded in the OPS SPR Change Matrix, which were all discussed during this week's subgroup session. Of these 21 proposals, many required further action items to continue the discussion and no agreement was reached yet. However the following proposals were discussed and a conclusion was reached. For full details of the proposed changes, please refer to the applicable change matrix.

- The group agreed with the operational need to add airport and runway (with length set to 7 characters) into an EPP report. The group concluded that the preferred option was to include the destination airport and runway once, at the end of the EPP report along with including the current gross mass and trajectory intent. This will result in an ASN.1 modification.
- The group also agreed to add "call sign only" to UM117 to allow call sign only check in. The preferred option however is to use UM183 [freetext] concatenated to UM117 to avoid modification of ASN.1 and a new CPDLC message.
- The group agreed to the proposed inclusion of Report (heading/speed/route) downlink to the next ATSU upon transfer. However, this is already covered in the B2 standard by using DM321. This downlink is however not in the B1 message set.
- The group agreed to change the minimum value of the "DistanceSpecified" parameter to be 0.1 rather than the currently defined 1.0.
- The group agreed on creating a new EPP report based on trajectory intent status change trigger.
- The group agreed on the operational need for the inclusion of V_{APP} (Planned Final Approach Speed). However, further work is needed to determine the simplest solution to including this value while allowing for backwards compatibility.

The operational subgroup will meet for 2hours every second Wednesday from 3:00-5:00pm Paris time, starting January 12th, 2022. Each Webex will cover one to two change proposals.

The Performance/Safety Subgroup- Theresa Brewer (FAA):
The group reviewed the Inmarsat paper POS-PL-002 from July 2021 plenary and agreed that any potential changes would be to the time values (e.g. RCP130, RCP240) and not the hazard classification value (e.g. .999 equates to a class 4 minor hazard).

The group also agreed to not change the end-to-end value of 130 at this time, but that the group will review any specific proposal regarding adjustment of the $RCTP_{ATSU}$ and $RCTP_{CSP}$ within the $RCTP_{ATSP}$ values.

The group also agreed that documentation regarding the data collection and analysis that led to the current values would be useful. However, it was stated that there may be proprietary concerns with sharing the data which will have to be further looked at. The group then agreed that the data quantifying the observed $RCTP_{ATSU}$ and $RCTP_{CSP}$ with current systems would be useful as well, but it was acknowledged that this data would be quite difficult to collect and therefore unlikely to be provided.

The group then reviewed ICAO PBCS project team paper prepared by Frederic Beltrando (Airbus) regarding proposals to change some of the PBCS safety requirements (SRs). The

group agreed that all interested members would review the paper in more detail and email any questions or concerns to Frederic Beltrando (Airbus). Any significant comments will then be discussed at the next Perf/Safety subgroup session. The subgroup discussions then concluded and remaining items were planned for discussion at the next meeting.

<u>SC-186 Tiger Team – Randy Bone/Joachim Hochwarth:</u>

During the Tiger Team kickoff meeting Randy Bone (MITRE) and Joachim Hochwarth (GE Aviation) gave an overview of the interval management (IM) concept and sample operations. And then a description of the past activity of the tiger team between SC-214/WG-78 and SC-186/WG-51 was discussed.

Then the group discussed validation activities and current work being done on the subject. This was followed by an overview of the current IM relevant messages. Then several proposed changes were reviewed. These will be discussed in depth during future tiger team meetings.

The next step is to set up recurring tiger team meetings as well as sending out draft changes to the tiger team to review prior to the meetings. Currently the exact dates/times for the meetings are TBD and will be set up by the group leaders early in 2022.

11. Any Other Business (Plenary)

Alex Engel (EUROCAE) brought up that at the January 2022 TAC there will be a proposal from DFS to make a working group to define standards using SWIM to distribute data via ADS-C common service. WG-78 has been identified as being a partner group on this effort. There will be a paper submitted on the subject shortly.

Luc Emberger (Airbus) commented that SWIM is purely ground-ground based so it should not impact our ground- air connections. Note: The ADS-C concept may require some general updates in our standards. This will be further discussed during the next meetings.

The group agreed to wait to review the paper once it is available and determine if our deliverables are impacted.

12. Review of Action Items (Plenary)

The action item list was reviewed and updated as necessary. Items which were deemed complete were closed out. It was reminded that the subgroups will maintain their own action item list for working group action items.

13. Upcoming Schedule (Plenary)

Claire Robinson (Universal) summarized the schedule discussion from earlier in the day. The next plenary will be Feb 28-Mar 4, 2022 and will be held in person in Washington DC, USA. There will be virtual options for those who cannot travel. A full meeting (non plenary) is tentatively planned for the April 2022 timeframe and will most likely be virtual. Further details will be communicated once finalized.

14. Adjourn

The meeting was adjourned on December 17th, 2021 at 3:00pm EDT.

Rochelle Perera
Secretary, SC-214

CERTIFIED as a true and accurate summary of the meeting.

Claire Robinson
Chair, SC-214

Luc Emberger
Chair, WG-78